

Missouri Department of Natural Resources

Total Maximum Daily Load Information Sheet

Lake Taneycomo

Waterbody Segment at a Glance:

County: Taney
Nearby Cities: Branson
Area of impairment: 1730 acres
Pollutant: Low Dissolved Oxygen
Source: Table Rock Dam



State map showing Lake Taneycomo and its watershed

TMDL Priority Ranking: High

Description of the Problem

Beneficial uses of Lake Taneycomo

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health associated with Fish Consumption
- Cold Water Fishery
- Whole Body Contact
- Boating and Canoeing
- Drinking Water Supply

Use that is impaired

- Protection of Warm Water Aquatic Life
- Cold Water Fishery

Standards that apply

- The Missouri Water Quality Standard, found in 10 CSR 20-7.031 Table A, for dissolved oxygen in Cold Water Fisheries is 6.0 milligrams per liter (mg/L) or parts per million.

Background Information and Water Quality Data

Deep water discharges from Table Rock Lake for the purpose of generating electrical power provides the discharge of water cool enough to maintain a cold water fishery. However, due to thermal stratification in the lake during summer and autumn, cold water in the lower elevations of the lake does not mix with the warmer surface water and becomes depleted of dissolved oxygen (DO) resulting in lower concentrations of DO entering Lake Taneycomo. During these months, the

6.0/L standard for DO is rarely met. There are a variety of ways to raise DO. Liquid oxygen has been used to raise DO levels in the releases from Table Rock Dam. Modifications to the hydroturbine have raised DO some. Also, starting in the late 1990s, turbine venting (drawing air into the generating turbines as water flows through them) is used to add oxygen to the water. But all efforts to raise DO have to be balanced with retaining Table Rock Lake and Dam as an important source of electrical power. There is a standing committee, the Operations Sub-Committee of White River DO Committee - Table Rock Lake, that prepares an Operational Action Plan every year for the Low Dissolved Oxygen Season, which is from June through December. This document “provides the framework and criteria for interagency cooperation and actions which may protect the trout fishery downstream of Table Rock Dam from low DO impacts to the extent reasonably possible while preserving the flood control and hydropower benefits of the dam to the maximum extent possible. This balancing act is accomplished through turbine venting systems improvements, liquid oxygen injection, spillway releases and modifications to routine operations at the dam and in the trout fishery”. Many methods and approaches to raising the DO in Lake Taneycomo have been, and are, being considered. Another factor that has to be balanced is the cost of these different methods.

Besides dam management for raising the DO, improved land management in the watershed above the dam is being considered. Large amounts of organic material in a waterbody require oxygen to decompose. If the amount of incoming organic material can be reduced through best management practices (BMPs) up in the watershed, this should raise the DO within Table Rock Lake, and hence in the water released to Lake Taneycomo. How many and what types of BMPs are needed, how much of an effect they would have and how long before the effect would show up in Lake Taneycomo are some of the many unknowns. That BMPs could have a positive effect in a relatively short time is likely, judging from recent data regarding the James River. Reductions in phosphorus in the James River arm of Table Rock Lake starting in 2001 are already having a noticeable effect on that lake.

The TMDL for Lake Taneycomo is due to be developed in 2005.

**Dissolved Oxygen Data for Lake Taneycomo Collected at the
School of the Ozarks, 1989-2003 (map on next page)**

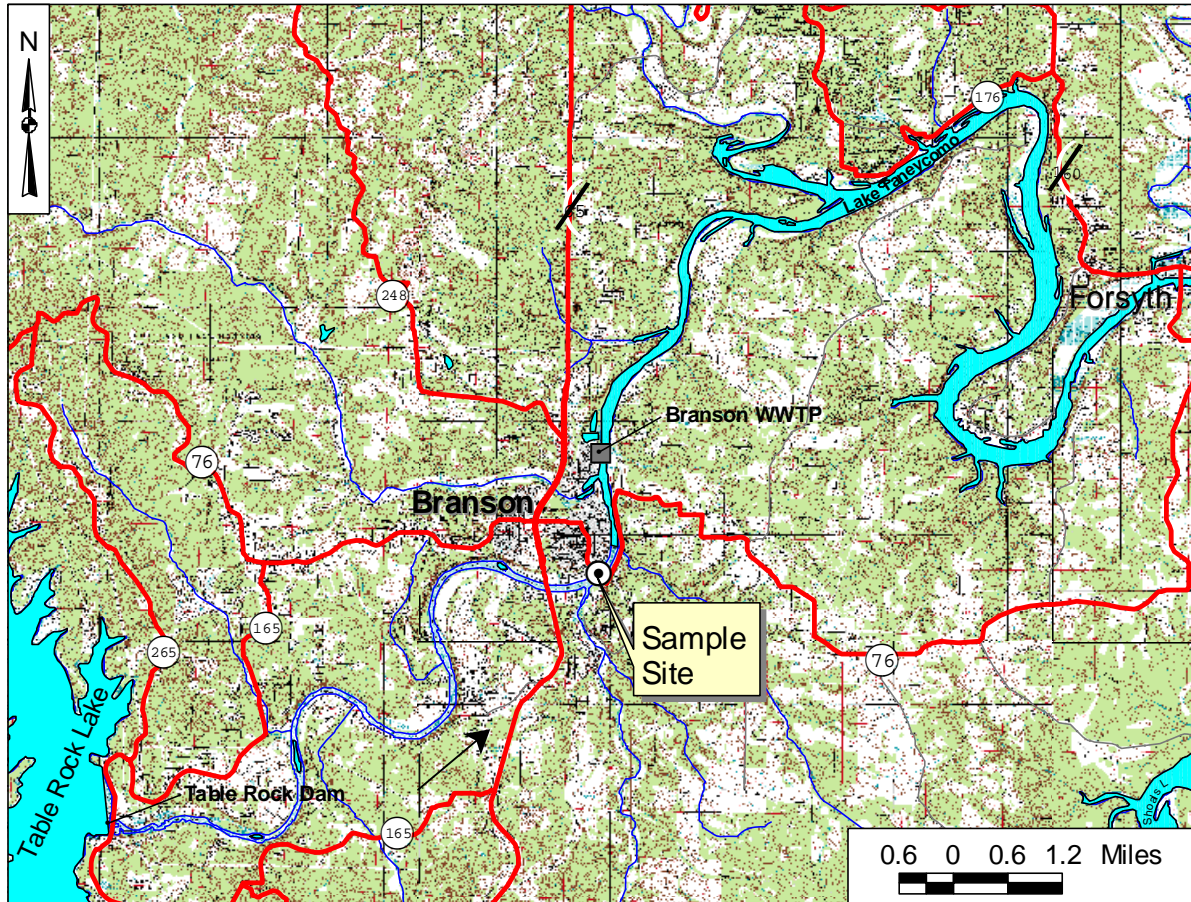
| Water Year | Total No. of Samples | 6.0 mg/L or above | < 6.0 mg/L | < 4.0 mg/L | <3.0 mg/L | <2.0 mg/L | Estimated Frequency WQS is Exceeded* | | |
|------------|----------------------|-------------------|------------|------------|-----------|-----------|--------------------------------------|-------|--|
| 1989 | 168 | 103 | 65 | 5 | 0 | 0 | | 18.0% | |
| 1990 | 210 | 72 | 138 | 34 | 3 | 0 | | 37.8% | |
| 1991 | 195 | 88 | 107 | 17 | 3 | 0 | | 29.3% | |
| 1992 | 176 | 87 | 89 | 10 | 1 | 0 | | 24.4% | |
| 1993 | 170 | 69 | 101 | 26 | 7 | 4 | | 36.9% | |
| 1994 | 101 | 28 | 73 | 33 | 4 | 1 | | 36.0% | |
| 1995 | 163 | 34 | 129 | 74 | 24 | 2 | | 35.3% | |
| 1996 | 174 | 106 | 68 | 23 | 5 | 0 | | 18.6% | |
| 1997 | 112 | 23 | 89 | 32 | 20 | 6 | | 39.3% | |
| 1998 | 173 | 42 | 131 | 62 | 35 | 8 | | 35.9% | |
| 1999 | 183 | 12 | 171 | 78 | 23 | 3 | | 46.8% | |
| 2000 | 203 | 18 | 185 | 96 | 42 | 23 | | 50.7% | |

| | | | | | | | | | |
|------|-----|-----|-----|----|----|---|--|-------|--|
| 2001 | 181 | 127 | 54 | 18 | 10 | 7 | | 14.8% | |
| 2002 | 169 | 31 | 138 | 23 | 10 | 3 | | 40.2% | |
| 2003 | 204 | 110 | 94 | 22 | 0 | 0 | | 25.7% | |

Source: U.S. Geological Survey

*The estimated frequency is the number of days in the year that the WQS (6.0 mg/L) is exceeded. In 1989, for example, the WQS was exceeded 65 out of 365 days in the year, or 18% of the time.

Lake Taneycomo in Taney County, Missouri, and Sampling Site (School of the Ozarks)



Direction of Flow →

For more information call or write:

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Water Protection Program

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